UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,791	06/06/2006	Mark Lawrence Williams	1033963-000025	5493

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EXAMINER
ANDREWS, LEON T

ART UNIT	PAPER NUMBER
2462	

NOTIFICATION DATE	DELIVERY MODE
08/30/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2011*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-9* is/are pending in the application.

    5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-9* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Objections

1.   **Claim 7-8, line 2** recited the optional language "operative to". In order to present the

claims in a better form and to describe positive or required steps/functions to be performed,

applicant is suggested to revise the claim language such that the steps/functions which followed

"operative to" are required and not optional.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or
>
> described as set forth in section 102 of this title, if the differences between the subject
>
> matter sought to be patented and the prior art are such that the subject matter as a whole
>
> would have been obvious at the time the invention was made to a person having ordinary
>
> skill in the art to which said subject matter pertains. Patentability shall not be negatived
>
> by the manner in which the invention was made.

3.   **Claims 1-2 and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable by Admitted

Prior Art (hereinafter APA) of the application, Williams (Pub. No.: US 2008/0310426 A1) in

view of Rui et al. (Pub. No.: US 2004/0220769 A1).

Regarding Claims 1 and 5, APA discloses a network and a method for estimating a system

state, the network comprising a plurality of nodes, each node having means for receiving and

sending information and means for processing information, and each node being connected to

selected other of the network (network where each node is connected for receiving and

transmitting to other neighbouring nodes including the processing of information at each node

and an estimate of the system state is maintained, [0003], [0008], page 1, lines 3, 1-6), each node

including:

particle filter means for maintaining a set of particles and associated weights, which

represent an estimate of the system state, and means for updating the set when new information

is available (particle filter where set of particles representative of system state where weight is

assigned to each particle and estimate of the state is by the weighted particles with update at time

of availability, [0003], page 1, lines 1-14),

means for representing the estimating system state as a mixture of Gaussian distributions,

and means for communicating said mixture to neighbouring nodes (set of particles representative

of a system state where the state with observations have Gaussian function, and the network

wherein each node receives and transmits information to neighbouring nodes, [0004], [0008],

page 1, lines 1-5, 1-4),

said means for updating, being responsive to receiving said mixture from a neighbouring

node, for updating its estimate of the system state (update at time the system becomes available

to update the particles representative of the system state where weight assigned to each particle

and an estimate of the state obtained by the particles distribution function with the particle

filtering by means of observation with sensors have the Gaussian measurement function and

processing carried out at the nodes and exchanged between neighbouring nodes, [0003], [0004],

[0012], page 1, lines 3-16, 1-5, 2-5).

APA fails to specifically disclose estimated state as a mixture of Gaussian distribution.

But, the Rui et al. discloses estimated states are in the form of Gaussian distribution,

paragraph [0012], page 2, lines 1-5.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time

the invention was made to use Rui et al.'s limitation because this would have allowed the state

estimates to be in the form of Gaussian distribution, paragraph [0012], page 2, lines 4-5.

Regarding Claim 2, APA discloses a method of claim 1, wherein said updating, at each node, is

carried out by resampling the particles comprising providing new weights for each particle

comprising a said mixture of Gaussian distributions received from the neighbouring node,

divided by said mixture of Gaussian distributions formed from the existing particle set in the

node (update resampling particles with weight where the particle have Gaussian measurement

function and new weights are assigned to each particle according to the state given in the

measurement calculated in the phase with the particle processing carried out at the node, [0003],

[0004], [0012], page 1, liens 13-16, 1-13, 2-5).

APA fails to specifically disclose estimated state as a mixture of Gaussian distribution.

But, the Rui et al. discloses estimated states are in the form of Gaussian distribution,

paragraph [0012], page 2, lines 1-5.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time

the invention was made to use Rui et al.'s limitation because this would have allowed the state

estimates to be in the form of Gaussian distribution, paragraph [0012], page 2, lines 4-5.

4.   **Claims 3 and 8-9** are rejected under 35 U.S.C. 103(a) as being unpatentable by Admitted

Prior Art (hereinafter APA) of the application in view of Rui et al. and Mookerjee et al. (Patent

No.; US 7,180,443 B1).

Regarding Claims 3 and 8, APA discloses a network and a method, wherein said means for

communicating is operative to transmit each Gaussian distribution of said mixture as signals

representing the mean and covariance of the distribution.

The combination of APA and Rui et al. fails to specifically disclose Gaussian distribution defined to have covariance achievable by the weighting the states with measurement at each update, column 9, lines 14-23, Fig. 3, 326, update state estimate, covariance.

But, the Mookerjee et al. discloses Gaussian distribution defined to have covariance achievable by the weighting the states with measurement at each update, column 9, lines 14-23, Fig. 3, input covariance 316, update state estimate, covariance 326.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Mookerjee et al.'s limitation because this would have allowed the Gaussian distribution defined to have covariance, column 9, lines 14-20.

Regarding Claim 9, APA discloses a network as claimed in claim 5, wherein each node is a sensor (each node corresponds to a senor, [0012], page 1, lines 3-4) for tracking aircraft.

The combination of APA and Rui et al. fails to specifically disclose node for tracking aircraft.

But, the Mookerjee et al. discloses Fig. 1, tracking system tracks an aircraft target 12 using a radar system (sensor), column 1, lines 18-20.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use APA's limitation because this would have allowed the radar system (sensor node) to track an aircraft, column 1, liens 18-19.

5.   **Claims 4 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable by Admitted

Prior Art (hereinafter APA) of the application in view of Rui et al. and Behroozi (Pub. No.: US

2005/0226179 A1).

Regarding Claims 4 and 6, APA et al. discloses a network and a method, wherein a

communication port of each node includes a channel filter.

The combination of APA and Rui et al. fails to specifically disclose node includes

channel filter.

But, Behroozi discloses node includes channel filtering, [0025], page 2, lines 1-2.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time

the invention was made to use Behroozi's limitation because this would have allowed the node to

provide filtering of the signal, [0025], page 2, lines 8-10.

6.   **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable by Admitted Prior Art

(hereinafter APA) of the application in view of Rui et al. and Behroozi.

Regarding Claim 7, APA discloses a network of claim 6, wherein said channel filter is

operative to compute new weights for each particle in a resampling operation, the new weights

comprising said mixture of Gaussian distributions communicated to the node, divided by said

mixture of Gaussian distributions representing the existing particle set at said node (resampling

particles with weight where the particle have Gaussian measurement function and new weights

are assigned to each particle according to the state given in the measurement calculated in the

phase with the particle processing carried out at the node, [0003], [0004], [0012], page 1, liens

13-16, 1-13, 2-5).

The combination of APA and Behroozi fails to specifically disclose mixture of Gaussian

distribution.

But, the Rui et al. discloses estimated states are in the form of Gaussian distribution,

paragraph [0012], page 2, lines 1-5.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time

the invention was made to use Rui et al.'s limitation because this would have allowed the state

estimates to be in the form of Gaussian distribution, paragraph [0012], page 2, lines 4-5.

Response to Arguments

7.   Applicant's arguments filed June 9, 2011 have been considered. But, the arguments are

moot in view of the new grounds of rejections with the use of new prior art in the current

prosecution of the claims.

Conclusion

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to LEON ANDREWS whose telephone number is (571)270-1801.

The examiner can normally be reached on Monday through Friday 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Rao S. Seema can be reached on (571) 272-3174. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon Andrews/
Examiner, Art Unit 2462
August 23, 2011

/Kevin C. Harper/

Primary Examiner, Art Unit 2462